

Jury Member Report – Doctor of Philosophy thesis.


Name of Candidate: Mikhail Kurenkov

PhD Program: Engineering Systems

Title of Thesis: Neural field-based optimal motion planning method for differential drive robots with nonholonomic constraints, robots in dynamic environment and swarm of robots

Supervisor: Associate Professor Dzmitry Tsetserukou

Name of the Reviewer:

<p>I confirm the absence of any conflict of interest</p> 	<p>Date: 4-11-2024</p>
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The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

The submitted thesis is generally well written and the structure of the chapters is logical.

The scientific level of the research work is very high and is focusing on applied research for motion planning of autonomous systems supported by few concrete industrial use cases.

The Reference and Impact diagrams present a high quality summary of the research work and the research question is well presented. I find the hypothesis too focused on the “*U-shaped obstacles and long thin walls*”. I recommend to make it with more breath, corresponding to the reality of the research work carried out and presented in the thesis.

Also, I recommend to change the word “Profit of robotics solution” in the Reference and Impact diagrams by the term “Effectiveness of robotics solution” which is a more appropriate term in this case.

The publications are excellent and Mikhail has also obtained grants and patents related to his research work.

The results of the research work are very close to applications, while maintaining an excellent level of scientific value as confirmed by the publications.

On page 18, the word “Figure 3” must be replaced by “Chapter 3”.

Provisional Recommendation

I recommend that the candidate should defend the thesis by means of a formal thesis defense

I recommend that the candidate should defend the thesis by means of a formal thesis defense only after appropriate changes would be introduced in candidate’s thesis according to the recommendations of the present report

The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense